

Serial No. 09/510,061  
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a<sup>3</sup>  
and/or second compound, optionally in the presence of a second catalyst.

### REMARKS

1. In the Official Action mailed July 9, 2001, the Examiner rejected claims 1-15 under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter.

As to the first matter, the Applicants have amended the claims to use the full name for the BOE abbreviation to address the Examiner's concerns and not for reasons of patentability.

Claim amendments have been made to claim 1 to address the Examiner's concerns with respect to the use of the term "may" and not for reasons of patentability.

With regard to the Examiner's third comment, the Applicant's maintain that the definition of B of claim 1 is definite as set forth in the claim. For the Examiner's benefit, the Applicant s provide the following clarification:

B is selected from the group of divalent radicals comprising

- a) aromatic, aliphatic, cycloaliphatic, and araliphatic hydrocarbon groups having 1-40 carbon atoms which groups are linear or branched and contain one or more hetero atoms and groups selected from the group of oxygen, nitrogen, sulphur, phosphorus, sulphone, sulphony, amine, amide, urea, urethane, and ester;
- b) ester groups;
- c) ether groups;
- d) amide groups;
- e) thioester groups;
- f) thioamide groups;
- g) urethane groups; and

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- h) urea groups;

Claim 1 was amended to address the Examiner's last comment in paragraph 1 regarding the lack of antecedent basis for the "latent hydroxyl groups" and not for reasons of patentability. Support for the amendment of Claim 1 can be found in the specification at page 16, ll. 12-13.

2. Claim 1 has been amended to address the Examiner's concerns regarding whether the composition comprises a compound, having the specified groups represented by formula (I), rather than the composition simply comprising the groups and not for reasons of patentability.

3. Claims 1-13 are rejected as allegedly indefinite under 35 U.S.C. 112. Applicants have amended the claims to alleviate the Examiner's concerns with respect to these claims and not for reasons of patentability.

4. No response necessary.

5. The Examiner rejects claims 1-6 as allegedly anticipated by Mizutani et al. ('240). The Examiner erroneously states that Mizutani discloses a compound which meets formula (I) of the current application. Contrary to the Examiner's statement that all elements are disclosed in Mizutani, element C is not, so the rejection is unsupported by the art and should be withdrawn. The exclusion of a claimed element, no matter how insubstantial or obvious, from a prior art reference is enough to negate anticipation. *Connell v. Sears, Roebuck & co.*, 220 USPQ 193, 198 (Fed. Cir. 1983). More importantly, if, as is the case here, there is **not a reasonable certainty** that the claimed subject matter will necessarily result, a rejection based on anticipation must fail. *In re Brink*, 164 USPQ 247, 249 (CCPA 1970).

Mizutani describes a curable material formed by reacting a polyisocyanate compound, at least one polyhydroxyl compound and a hydroxyl functional bicyclic orthoester (col. 2, ll. 34-60). One skilled in the art would know from the ratio of hydroxyl groups to isocyanate groups of 0.9 to

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1.1. disclosed in col. 3, ll. 27-33, that substantially isocyanate-free compositions are taught by Mizutani. This can also be seen from the preparative examples 1-12 of Mizutani, in which exactly equimolar amounts of hydroxyl groups and isocyanate groups are reacted. The compounds thus prepared essentially consist of bicyclic orthoester groups, urethane groups and non-functional entities linking the bicyclic orthoester groups to the urethane groups.

Further, in contrast to what is taught by Mizutani, formula (I) in claim 1 of the instant application comprises an entity C selected from hydroxyl reactive functional groups. It is not even remotely suggested by Mizutani that the presence of hydroxyl reactive groups, for example isocyanate groups, is required or might offer any advantage in the bicyclic orthoester functional compounds. As stated above, the exclusion of a claimed element, no matter how insubstantial or obvious, from a prior art reference is enough to negate anticipation. *Connell v. Sears, Roebuck & co.*, 220 USPQ 193, 198 (Fed. Cir. 1983).

Additionally, in contrast to the present invention, in Mizutani, the curing mechanism involves cationic polymerization, which is highly influenced by the presence of water. As such, one skilled in the art would know that water should be excluded during a cationic homopolymerization reaction.

Further, cationic ring opening homo polymerization of bicyclic orthoesters, the only crosslinking reaction disclosed for the curable compositions of Mizutani et al., does not generate hydroxyl functionality. Therefore, the presence of any hydroxyl reactive functional group is neither required nor advantageous in the Mizutani composition.

From the explanations above it becomes clear that the present invention is not only novel over Mizutani, but also that the composition of the present invention involves an inventive step over Mizutani.

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For at least the reasons set forth above, Mizutani does not anticipate the present invention, and withdrawal of the objection is therefor respectfully requested.

In view of the amendments and remarks herein and the papers submitted previously, Applicants respectfully request reconsideration and withdrawal of the subject rejections. The present application is believed to be in condition for allowance, which action is respectfully requested.

Respectfully submitted,

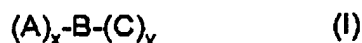
  
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Please amend the claims as follows:

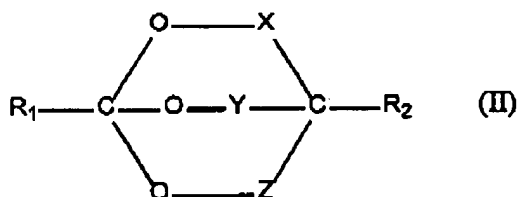
1. A coating composition comprising a compound comprising at least one [BOE] bicyclo-orthoester group having latent hydroxyl groups and at least one [other] hydroxyl reactive functional group represented by the following formula I



wherein

x and y are independently selected from 1 to 10;

A has the structure according to the following formula II



wherein

X and Z are independently from each other selected from linear or branched alk(en)ylene groups with 1-4 carbon atoms optionally containing an oxygen or a nitrogen atom;

Y is nothing or is selected independently of X and Z from linear or branched alk(en)ylene groups with 1-4 carbon atoms optionally containing an oxygen or a nitrogen atom;

one of R<sub>1</sub> and R<sub>2</sub> is selected from the group of monovalent radicals comprising hydrogen, hydroxyl, alk(en)yl groups comprising 1-30 carbon atoms which [may be] are linear or branched and [may] optionally contain one or more hetero atoms and groups selected from the group of oxygen, nitrogen, sulphur, and ester;

the other of R<sub>1</sub> and R<sub>2</sub> is selected from the group of divalent radicals comprising

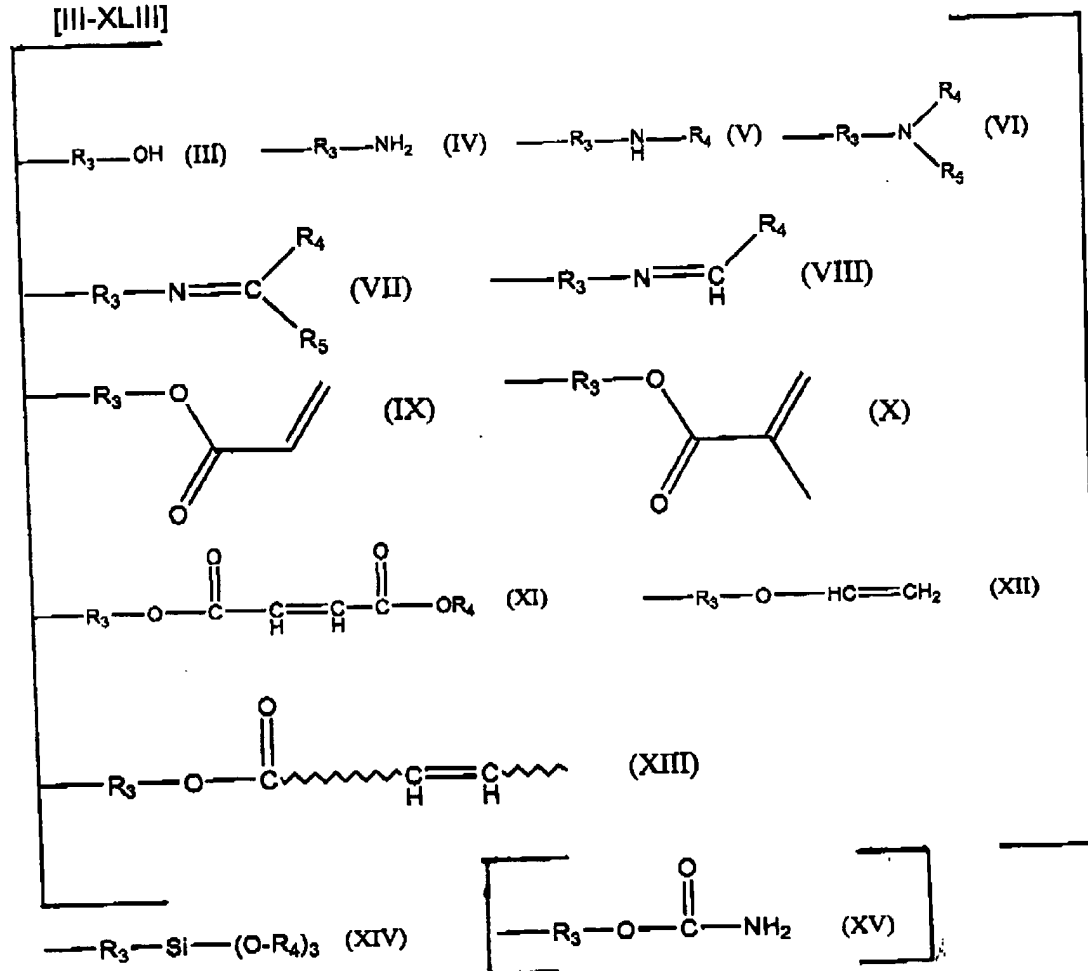
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alk(en)yl ne groups having 1-10 carbon atoms which groups [may be] are linear or branched and contain one or more hetero atoms and groups selected from the group of oxygen, nitrogen, sulphur, and ester;

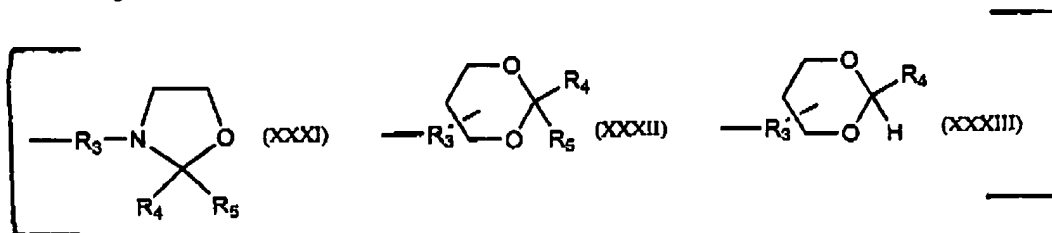
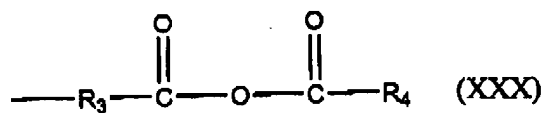
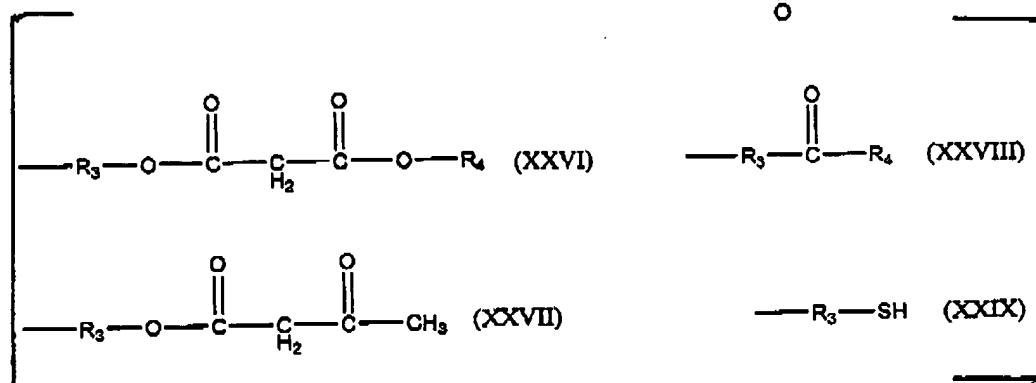
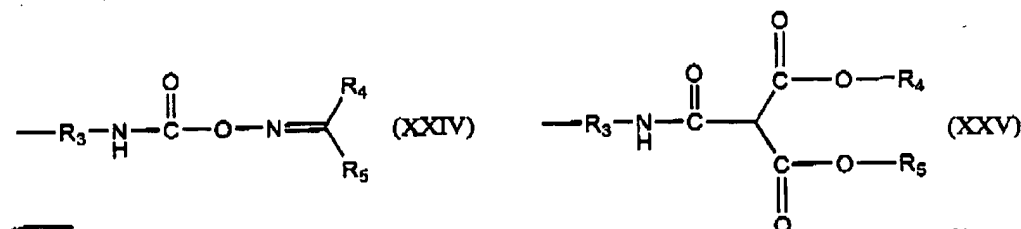
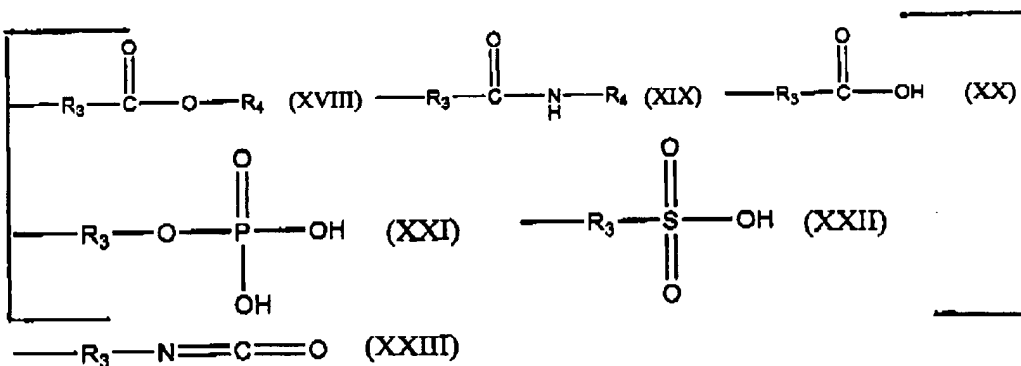
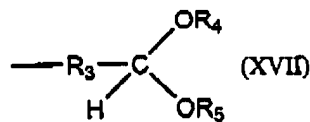
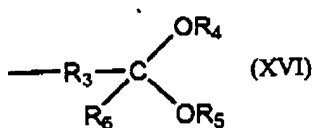
B is selected from the group of divalent radicals comprising aromatic, aliphatic, cycloaliphatic, and araliphatic hydrocarbon groups having 1-40 carbon atoms which groups [may be] are linear or branched and contain one or more hetero atoms and groups selected from the group of oxygen, nitrogen, sulphur, phosphorus, sulphone, sulphony, amine, amide, urea, urethane, and ester; ester groups; ether groups; amide groups; thioester groups; thioamide groups; urethane groups; and urea groups;

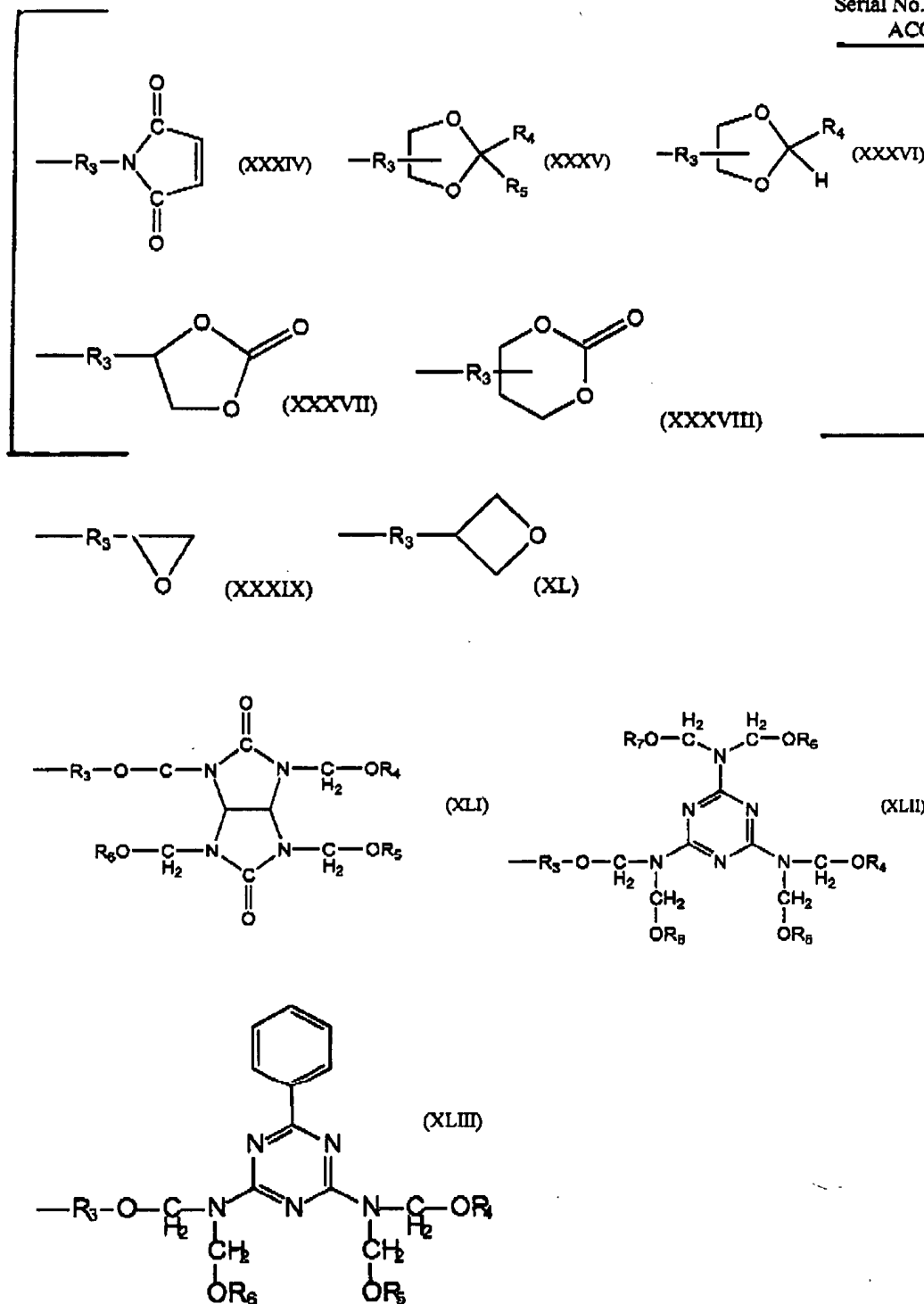
C is a hydroxyl reactive functional group selected from the following formulae:

[III-XLIII]



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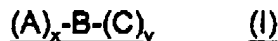
wherein  $R_3$  is selected from the group of alk(en)ylene groups having 1-10 carbon atoms which groups [may be] are linear or branched and [may] optionally contain



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one or more groups selected from the group of ether, ester, urea, urethane, amid , and amine, and  $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$  and  $R_8$  are independently from each other selected from the group of alk(en)yl groups having 1-10 carbon atoms which groups [may be] are linear or branched.

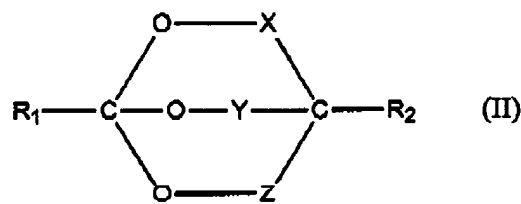
10. A coating composition [according to claim 1 wherein the coating composition comprises a second compound comprising at least two hydroxyl-reactive groups selected from the group of isocyanate, epoxy, acetal, carboxyl, anhydride, and alkoxy silane groups, or the second compound is an amino resin.] comprising a compound comprising at least one bicyclo-orthoester group having latent hydroxyl groups and at least one other functional group represented by the following formula  
!



wherein

x and y are independently selected from 1 to 10;

A has the structure according to the following formula II



wherein

X and Z are independently from each other selected from linear or branched alk(en)ylene groups with 1-4 carbon atoms optionally containing an oxygen or a nitrogen atom;

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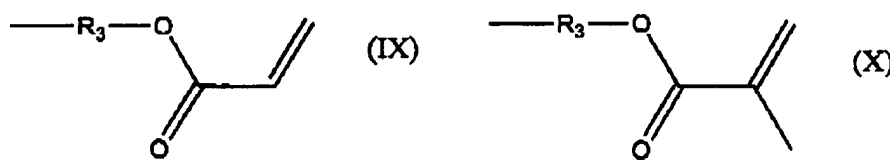
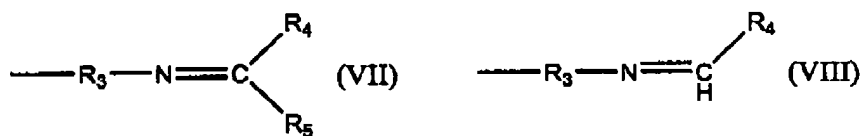
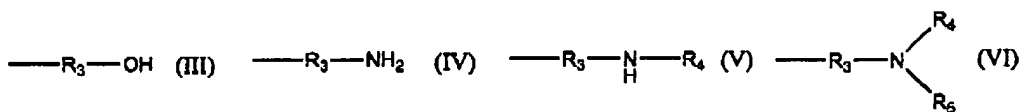
Y is nothing or is selected independently of X and Z from linear or branched alk(en)ylene groups with 1-4 carbon atoms optionally containing an oxygen or a nitrogen atom;

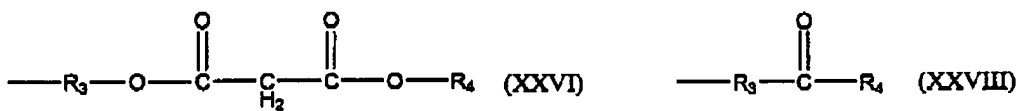
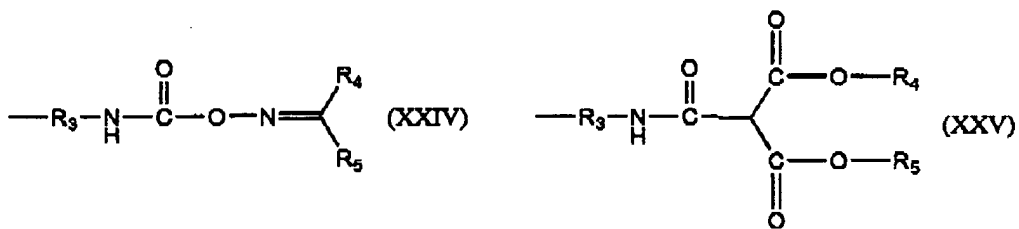
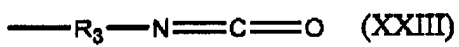
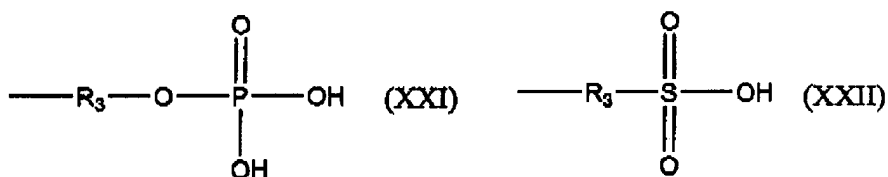
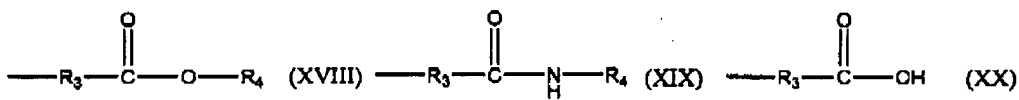
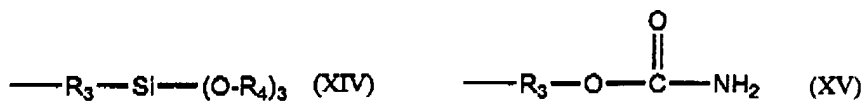
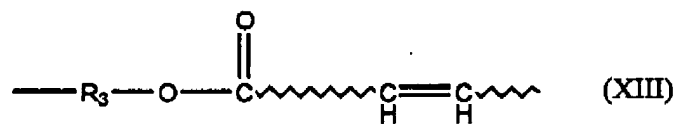
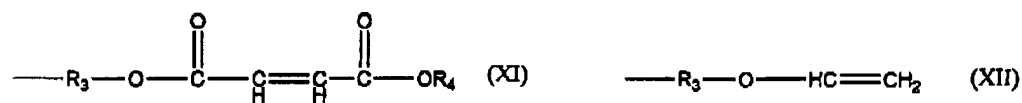
one of R<sub>1</sub> and R<sub>2</sub> is selected from the group of monovalent radicals comprising hydrogen, hydroxyl, alk(en)yl groups comprising 1-30 carbon atoms which are linear or branched and optionally contain one or more hetero atoms and groups selected from the group of oxygen, nitrogen, sulphur, and ester;

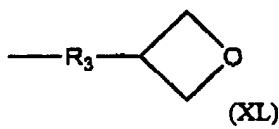
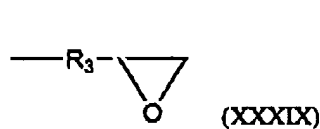
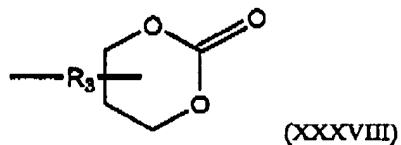
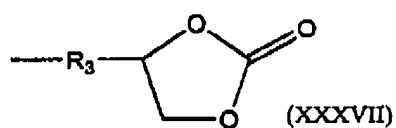
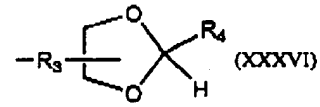
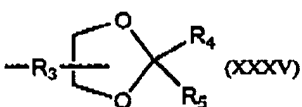
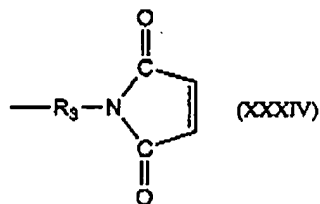
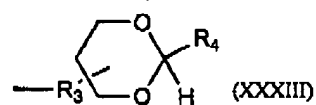
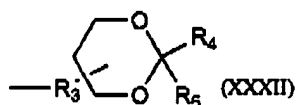
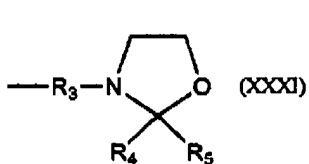
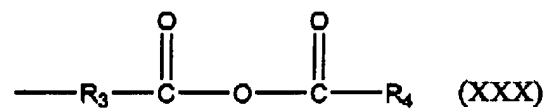
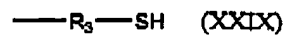
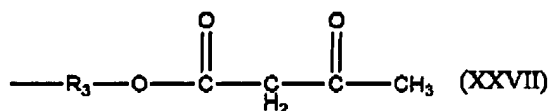
the other of R<sub>1</sub> and R<sub>2</sub> is selected from the group of divalent radicals comprising alk(en)ylene groups having 1-10 carbon atoms which groups are linear or branched and contain one or more hetero atoms and groups selected from the group of oxygen, nitrogen, sulphur, and ester;

B is selected from the group of divalent radicals comprising aromatic, aliphatic, cycloaliphatic, and araliphatic hydrocarbon groups having 1-40 carbon atoms which groups are linear or branched and contain one or more hetero atoms and groups selected from the group of oxygen, nitrogen, sulphur, phosphorus, sulphone, sulphony, amine, amide, urea, urethane, and ester; ester groups; ether groups; amide groups; thioester groups; thioamide groups; urethane groups; and urea groups;

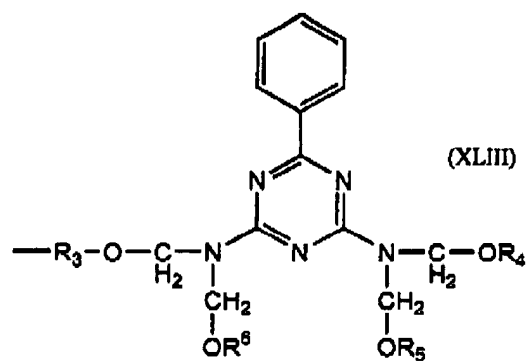
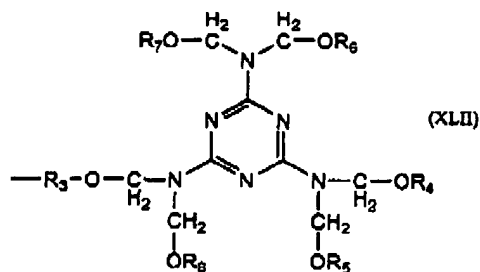
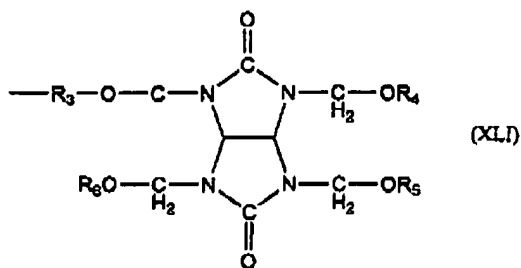
C is a functional group selected from the following formulae III-XLIII



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wherein  $R_3$  is selected from the group of alk(en)ylene groups having 1-10 carbon atoms which groups are linear or branched and optionally contain one or more groups selected from the group of ether, ester, urea, urethane, amide, and amine, and  $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$  and  $R_8$  are independently from each other selected from the group of alk(en)yl groups having 1-10 carbon atoms which groups are linear or branched, wherein the coating composition comprises a second compound comprising at least two hydroxyl reactive groups selected from the group of isocyanate, epoxy, acetal, carboxyl, anhydride, and alkoxy silane groups, or the second compound is an amino resin.

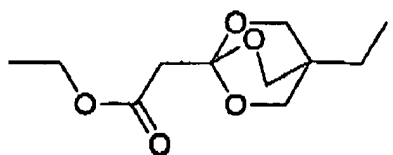
11. A coating composition according to claim 10, wherein the [hydroxyl-reactive compound is] second compound comprising at least two hydroxyl reactive groups is an aliphatic, cycloaliphatic or aromatic compound comprising at least two isocyanate groups or adducts thereof.

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12. A coating composition according to claim 11 wherein the second compound comprising at least two hydroxyl reactive groups is an isocyanurate.

13. A process for curing a coating composition according to claim 1 wherein the latent hydroxyl groups of the bicyclo-orthoester groups are deblocked in the presence of water, optionally in the presence of a first catalyst, and reacted with the hydroxyl-reactive groups of the [first and/or second] compound, optionally in the presence of a second catalyst.

14. A process for the preparation of a compound comprising at least one [BOE] bicyclo-orthoester group and at least one other functional group according to the formula



in which a compound having at least one corresponding oxetane group is converted in the presence of a catalytic amount of dibutyl tin oxide at a temperature above 180°C.